

**PENNSYLVANIA ACT 209
TRANSPORTATION IMPACT FEE STUDY**

**EAST COVENTRY TOWNSHIP
ROADWAY SUFFICIENCY ANALYSIS
AND
TRANSPORTATION CAPITAL IMPROVEMENT PLAN**

Prepared for:
**East Coventry Township,
Chester County**

June 2001

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EXECUTIVE SUMMARY

A *Roadway Sufficiency Analysis* and *Transportation Capital Improvement Plan* has been prepared in accordance with the requirements set forth in Pennsylvania Act 209 on behalf of East Coventry Township, Chester County, Pennsylvania. The Act 209 legislation permits municipalities to assess transportation impact fees on new development within their boundaries provided that they have adopted a municipal transportation impact fee ordinance in accordance with the procedures set forth in the Act. The process that East Coventry Township has undertaken includes the completion of the necessary milestones pursuant to the Act 209 legislation, which is more thoroughly defined within the *Roadway Sufficiency Analysis*. The procedural requirements and the results of the *Roadway Sufficiency Analysis* have led to the following milestones, conclusions, recommendations, and the *Transportation Capital Improvement Plan*.

As required by the Act 209 legislation, the Township formed a seven-person Transportation Advisory Committee (TAC) by resolution (no. 2004-04) on January 17, 2000 and adopted an interim Transportation Impact Fee until completion of the study and the formal Impact Fee Ordinance. The advisory committee was charged with assisting in the preparation of the *Land Use Assumptions Report*, *Roadway Sufficiency Analysis*, and *Transportation Capital Improvement Plan*, as well as reviewing of the results of those studies and ultimately making a recommendation of action to be taken by Township Supervisors. The Transportation Advisory Committee of East Coventry Township consisted of the following members:

John Canale, Jr.	Rosemarie C. Miller
Jerry Dames, Jr.	James Reading
Charles Knapp	Larry Schear, Vice-Chairperson
Connie Megay, Planning Commission	Tim Zettlemoyer, Chairperson

- **Land Use Assumptions Report** – The Act 209 legislation requires the completion and adoption of a *Land Use Assumptions Report* to identify the anticipated development potential within the Township, which in turn was utilized in estimating future traffic volumes within the Township during the completion of the *Roadway Sufficiency Analysis*. The Transportation Advisory Committee has selected a 10-year study horizon to be utilized for the purposes of these Act 209 Transportation Study procedures, and as such, the projected future 2010 build-out is:

Residential Build-out	770 dwelling units
Commercial Build-out	116,920 square feet
Office/Light-Industrial Build-out	293,760 square feet
Institutional Build-out	22,320 square feet

- **Transportation Network Inventory** – This inventory included information relative to the existing traffic conditions utilized in the completion of the *Roadway Sufficiency Analysis*. Physical and operating characteristics of the East Coventry roadway system were inventoried for this task, including roadway and

intersection dimensions (i.e., lane widths, shoulder widths, etc.), number of lanes, presence of traffic control devices (i.e., traffic signals, stop signs, or yield signs), and operational features (i.e., speed limits, traffic signal timing/phasing). The primary basis for the technical analysis was the 2000 weekday afternoon peak hour turning movements, which were counted at the 22 study intersections.

- **Transportation Service Area** – Act 209 requires the establishment of specific study boundaries, or transportation service areas, for evaluation and application of transportation impact fees. The Transportation Advisory Committee established two contiguous transportation service areas within East Coventry Township. The first service area, Transportation Service Area North, measures 5.3 square miles and is generally formed by Pigeon Creek, a portion of Kulp Road, and approximately Mitchell Road. The second service area, Transportation Service Area South, measures 5.7 square miles and consists of the area south of Transportation Service Area North. Of the following 22 intersections selected to be studied in this *Roadway Sufficiency Analysis*, 15 intersections were located within the northern service area and seven intersections were located within the southern service area.

Transportation Service Area North

- Schuylkill Road (S.R. 0724) and Old Schuylkill Road
- Schuylkill Road (S.R. 0724) and Peterman Road
- Schuylkill Road (S.R. 0724) and Fricks Lock Road
- Schuylkill Road (S.R. 0724) and Sanatoga Road (S.R. 1034)
- Schuylkill Road (S.R. 0724) and Anderson Road
- Schuylkill Road (S.R. 0724) and Wells Road
- Schuylkill Road (S.R. 0724)/Bethel Church Road (S.R. 1033)/Linfield Road (S.R. 1035)/Old Schuylkill Road
- Old Schuylkill Road and Spiece Road
- Old Schuylkill Road and Peterman Road
- Old Schuylkill Road and Ellis Woods Road
- Old Schuylkill Road and Sanatoga Road (S.R. 1034)
- Old Schuylkill Road and Saylor's Mill Road
- Cedarville Road (S.R. 1034) and Spiece Road
- Cedarville Road (S.R. 1034) and Sanatoga Road
- Kulp Road and School House Road

Transportation Service Area South

- Bethel Church Road (S.R. 1033) and Kolb Road
- Bethel Church Road (S.R. 1033) and Saylor's Mill Road
- Bethel Church Road (S.R. 1033) and Creamery Road/Stony Run Road
- Kulp Road and Ebelhare Road
- Bethel Church Road (S.R. 1033) and Ellis Woods Road
- Ridge Road (S.R. 0023) and Porters Mill Road
- Ridge Road (S.R. 0023) and Bethel Church Road

Additionally, both Schuylkill Road and Ridge Road as a whole were selected to be specifically studied, in terms of capacity and level of service, for this *Roadway Sufficiency Analysis*.

- Preferred Levels of Service** – Consistent with the Act 209 legislation, the Transportation Advisory Committee adopted distinct operating criteria, or preferred levels of service, for the study intersections and roadways located within each respective Transportation Service Area (TSA), as follows:

	<u>TSA – North</u>	<u>TSA-South</u>
Signalized Intersections ¹	Level-of-Service C	Level-of-Service C
Unsignalized Intersections	Level-of-Service D	Level-of-Service D
Roadway Segments	Level-of-Service D	Level-of-Service C

(1) – overall intersection operations as well as individual movements.

- 2000 Existing Conditions** – Analysis of the 22 study intersections indicates that the following intersections currently do not satisfy the preferred level of service criteria:
 - Schuylkill Road (PA Route 724) and Old Schuylkill Road (PA Route 724)
 - Schuylkill Road (PA Route 724) and Sanatoga Road
 - Schuylkill Road (PA Route 724) and Anderson Road
 - Schuylkill Road (PA Route 724) and Wells Road
 - Schuylkill Road (PA Route 724) and Bethel Church Road/Linfield Road

Analysis of the Schuylkill Road and Ridge Road roadway segments indicates that each presently operate at the preferred levels of service selected in the study.

- Existing Transportation Improvement Program** – The Existing Transportation Capital Improvement Program required to achieve the aforementioned preferred level-of-service is summarized in the *Roadway Sufficiency Analysis* and *Transportation Capital Improvement Plan*, and consists of improvements at 19 study intersections and six roadways within the Township. The projected cost of the improvement program is **approximately \$491,000**, including construction, engineering, right-of-way, and contingency costs. It is noted that the *Roadway Sufficiency Analysis* includes recommendations to address existing geometric deficiencies; however, these improvements have not specifically been included in the *Transportation Capital Improvement Plan*, but nevertheless should be addressed by the Township.
- Future Traffic Projections** – 2010 future traffic projections were developed based on anticipated regional traffic growth, trip generation estimates of future development located within the surrounding municipalities, and trip generation estimates of future development within the designated transportation service areas (as identified in the *Land Use Assumptions Report*). Future traffic was classified as “pass-through” traffic (not subject to transportation impact fees) or “development” traffic (subject to transportation impact fees), and is defined in the

Roadway Sufficiency Analysis along with the procedures in estimating and distributing future traffic to the roadway network.

- **2010 Future Pass-Through Conditions** – Analysis of the 22 study intersections under 2010 future pass-through conditions indicates that the following intersections will not satisfy the preferred level of service criteria:
 - Schuylkill Road (PA Route 724) and Peterman Road
 - Schuylkill Road (PA Route 724) and Fricks Lock Road
 - Schuylkill Road (PA Route 724) and Sanatoga Road
 - Schuylkill Road (PA Route 724) and Anderson Road
 - Schuylkill Road (PA Route 724) and Wells Road
 - Schuylkill Road (PA Route 724) and Bethel Church Road/Linfield Road

Analysis of the Schuylkill Road and Ridge Road roadway segments indicates that each will continue to operate at the preferred levels of service selected in the study.

- **Future Pass-Through Transportation Improvement Program** – The Future Pass-Through Transportation Capital Improvement Program required to achieve the aforementioned preferred level-of-service criteria is summarized in the *Roadway Sufficiency Analysis* and *Transportation Capital Improvement Plan*, and consists of improvements at three study intersections within the Township. The projected cost of the improvement program is **approximately \$381,000**, including construction, engineering, right-of-way, and contingency costs.
- **2010 Future Development Conditions** – Analysis of the 22 study intersections under 2010 future development conditions indicates that the following intersections will not satisfy the preferred level of service criteria:
 - Schuylkill Road (PA Route 724) and Peterman Road
 - Schuylkill Road (PA Route 724) and Fricks Lock Road
 - Schuylkill Road (PA Route 724) and Sanatoga Road
 - Schuylkill Road (PA Route 724) and Anderson Road
 - Schuylkill Road (PA Route 724) and Wells Road
 - Schuylkill Road (PA Route 724) and Bethel Church Road/Linfield Road
 - Ridge Road (PA Route 23) and Bethel Church Road

Analysis of the study roadway segments indicates that Ridge Road would continue to operate at the preferred levels of service selected for the study; however, Schuylkill Road would no longer satisfy the preferred level of service criteria and requires improvement.

- **Future Development Transportation Improvement Program** – The Future Development Transportation Capital Improvement Program required to achieve the aforementioned preferred level-of-service criteria is summarized with the *Roadway Sufficiency Analysis* and *Transportation Capital Improvement Plan*, and consists of improvements at eight study intersections within the Township and the

Schuylkill Road corridor throughout the Township. The projected cost of the improvement program is **approximately \$4,716,000**, including construction, engineering, right-of-way, and contingency costs.

- **Transportation Capital Improvement Plan** – The resultant *Transportation Capital Improvement Plan* includes costs allocated to responsible parties (i.e., East Coventry Township, the Pennsylvania Department of Transportation, and new development) and anticipated construction completion years. The approximate costs of the *Transportation Capital Improvement Plan* is summarized as follows:

Costs Attributable to Township	\$502,500
Costs Attributable to PennDOT	\$2,543,375
Cost Attributable to Development	\$2,542,125
<i>Total Costs of Transportation Capital Improvement Plan</i>	<i>\$5,588,000</i>

- **Transportation Impact Fee** – The impact fee calculation for development is based on the number of new trips generated by development during the weekday afternoon peak hour and the costs of improvements attributed to development in the *Transportation Capital Improvement Plan*, as well as a prorata share of the costs incurred for preparation of the *Roadway Sufficiency Analysis*. Accordingly, the transportation impact fees calculated for each service area to be assessed on a (weekday afternoon) per trip basis are as follows:

Transportation Service Area North ($\$2,503,057 \div 1,159$ trips)	\$2,159.67
Transportation Service Area South ($\$60,720 \div 288$ trips)	\$210.83

INTRODUCTION

Overview

This *Roadway Sufficiency Analysis* has been prepared in accordance with the requirements set forth in Pennsylvania Act 209 on behalf of East Coventry Township, Chester County, Pennsylvania. Pennsylvania Act 209 was signed into law effective December 19, 1990. It amends the Pennsylvania Municipalities Code (Act 247 of 1968, as amended) to permit municipalities to assess transportation impact fees on new development within their boundaries, provided that they have adopted a municipal transportation impact fee ordinance in accordance with the procedures set forth in the Act.

Impact fees under Act 209 may only be used for those costs incurred for improvements designated in the adopted transportation capital improvements plan of the municipality that are attributable to new development. The impact fees cannot be used for municipal, non-transportation-related capital improvements; for the repair, maintenance, or operation of existing or new municipal transportation capital improvements; or for the upgrade or replacement of existing municipal transportation capital improvements due to operational or safety deficiencies not related to new development. The Act specifically and only applies to off-site transportation capital improvements attributable to new development; it neither applies to, nor restricts the procedures or powers of the municipality to require on-site transportation improvements to remedy impacts of new development, nor is it intended to replace the municipality's ordinance requirements for submission of traffic impact studies.

All appendices supporting the *Roadway Sufficiency Analysis* referred to in this report are contained in a separate bound document entitled *Pennsylvania Act 209 Transportation Impact Fee Study Technical Appendices*, East Coventry Township, Chester County, dated June 2001.

Process

The process that East Coventry Township has undertaken includes the completion of the necessary milestones pursuant to the Act 209 legislation, as follows:

1. Appointment of a Transportation Advisory Committee and designation of the geographic area(s) of the municipality that will be subject to the transportation impact fee ordinance. The meeting minutes of the Transportation Advisory Committee are included in **Appendix A**.
2. Development and adoption of land use assumptions within the Township and the designated geographic area(s) called Transportation Service Areas (TSA's), which together with existing development are the subject of a roadway sufficiency analysis and development of a transportation capital improvement plan.
3. Completion and approval of a roadway sufficiency analysis for each Transportation Service Area, identifying traffic deficiencies and needed improvements attributable to existing traffic, future traffic not originating from within the service area (i.e., pass-through traffic), and future traffic originating from new development within the service

area for a preferred level(s) of service in terms of desired traffic operations during the designated peak hour of study.

4. Development and adoption of a transportation capital improvement plan, including costs, implementation priorities, and funding sources, specifically and separately addressing improvements required to remedy:
 - a. current traffic deficiencies resulting from **existing** traffic volumes and capacity limitations;
 - b. traffic deficiencies attributable to future **pass-through** traffic after existing deficiencies have been remedied; and
 - c. traffic deficiencies attributable to expected **new development** within the service area after pass-through traffic and after existing deficiencies have been remedied.
5. Adoption of a Transportation Impact Fee Ordinance based on the total cost of identified transportation improvements attributable to **new development** within the Transportation Service Area to be assessed on a “per trip” basis.

Act 209 requires a minimum future planning horizon of five years. A 10-year planning horizon has been selected for the purpose of this analysis, and the future year 2010 will be considered the design year. However, this document is not a static, “one-time” effort, as the Act 209 legislation has provisions for periodic updates of the roadway sufficiency analysis, capital improvement plan, and impact fees, as changes in the land use assumptions, transportation improvement needs, or funding conditions occur.

Land Use Assumptions

As required by Act 209, the East Coventry Township Transportation Advisory Committee approved the East Coventry Township *Land Use Assumptions Report*, dated June 8, 2001, which was completed by the Township Planner, Grafton Associates, at a public hearing on May 2, 2001. The Board of Supervisors adopted the *Land Use Assumptions Report* by resolution, as required by Act 209, on June 24, 2001. A copy of the *Land Use Assumptions Report* is provided in **Appendix B**.

The *Land Use Assumptions Report* identifies the anticipated long-term development build-out over the next 20 years within East Coventry Township, as well as the projected short-term 2010 build-out on a parcel-by-parcel basis, and provides graphics illustrating the location of these parcels. The projected short-term 2010 build-out, which is the basis of this analysis, is summarized below in **Table 1**.

Table 1. Land Use Assumptions Report 2010 Build-out Summary

Land Use Classification	TSA-North¹	TSA-South¹
Residential	700 dwelling units	70 dwelling units
Light-Industrial/Office	293,760 square feet	0 square feet
Commercial	83,920 square feet	33,000 square feet
Institutional	22,320 square feet	0 square feet

¹ Transportation Service Areas (TSA) within East Coventry Township, as defined in the next section of this report.

EXISTING TRANSPORTATION NETWORK

This *Existing Transportation Network* section includes a designation of the roadways and intersections selected to be evaluated as part of this *Roadway Sufficiency Analysis*, as well as an inventory of physical and operational characteristics of the existing Township transportation system required for the completion of the *Roadway Sufficiency Analysis*. This section also delineates the Transportation Service Areas required by the Act 209 legislation.

Roadway Characteristics

The East Coventry Township roadway system, as illustrated in **Figure 1**, consists primarily of two-lane, undivided roadways. Major regional access to the Township is provided via the U.S. Route 422 limited-access expressway, with access provided to the west on PA Route 724 (within North Coventry Township) and to the north along Linfield Road (within Limerick Township). The roadway network shown in Figure 1, including both roadway segments and intersections, constitutes the transportation roadway network analyzed pursuant to Act 209. The operating characteristics of each of the major study roadways are summarized as shown in **Table 2**.

Table 2. Existing Transportation Network Summary

Roadway	Roadway Classification ¹	Roadway Ownership	Posted Speed Limit (mph)
Schuylkill Road (S.R. 0724)	Minor Arterial ²	State	45 and (unposted)
Ridge Road (S.R. 0023)	Minor Arterial	State	50
Old Schuylkill Road	Major Collector	Township	35
Bethel Church Road (S.R. 1033)	Major Collector	State	25 to 40
Ellis Woods Road	Major Collector	Township	35
Linfield Road (S.R. 1035)	Major Collector ²	State	35
Sanatoga Road (S.R. 1034)	Major Collector	State/Township	35 to 40
School House Road	Major Collector	Township	35
Kulp Road	Minor Collector	Township	35
Cedarville Road (S.R. 1034)	Minor Collector ²	State/Township	35 to 40
Ebelhare Road	Minor Collector	Township	40
Saylors Mill Road	Minor Collector	Township	35

(1) – Based on the *East Coventry Township Comprehensive Plan*.

(2) – Reclassification may be appropriate based on 2000 average daily traffic volumes (Figure 1).

Several other Township roadways also comprise the transportation roadway network of the Township; however, these roadways are generally classified as local access roadways that provide access to the major arterials and collector roadways, but limited accessibility through the Township. The *East Coventry Township Comprehensive Plan* provides a further description of the existing Township roadway network. The following roadway segments were specifically designated for evaluation as part of this analysis, and include the following:

- Schuylkill Road (PA Route 724), west of Old Schuylkill Road to east of Bethel Church Road
- Ridge Road (PA Route 23), west of Porters Mill Road to east of Bethel Church Road

In addition to the study roadway segments, 22 study intersections have been selected by the Township and the Transportation Advisory Committee to be evaluated and included in the *Roadway Sufficiency Analysis* and *Capital Improvement Plan*, and include the following intersections, as indicated **Table 3**.

Table 3. Study Intersections

Intersection Reference No.	Intersection	Current Traffic Control
1	Schuylkill Road (PA Route 724) and Old Schuylkill Road	Stop Sign
2	Schuylkill Road (PA Route 724) and Peterman Road	Stop Sign
3	Schuylkill Road (PA Route 724) and Fricks Lock Road	Stop Sign
4	Schuylkill Road (PA Route 724) and Sanatoga Road	Stop Sign
5	Schuylkill Road (PA Route 724) and Anderson Road	Stop Sign
6	Schuylkill Road (PA Route 724) and Wells Road	Stop Sign
7	Schuylkill Road (PA Route 724)/Bethel Church Road/ Linfield Road/Old Schuylkill Road	Traffic Signal (with Stop Sign)
8	Old Schuylkill Road and Spiece Road	Stop Sign
9	Old Schuylkill Road and Peterman Road	Stop Sign
10	Old Schuylkill Road and Ellis Woods Road	Stop Sign
11	Old Schuylkill Road and Sanatoga Road	Stop Sign
12	Old Schuylkill Road and Saylor's Mill Road	Stop Sign
13	Cedarville Road and Spiece Road	Stop Sign
14	Bethel Church Road and Kolb Road	Stop Sign
15	Kulp Road and School House Road	Stop Sign
16	Bethel Church Road and Kolb Road	Stop Sign
17	Kulp Road and Ebelhare Road	Stop Sign
18	Bethel Church Road and Saylor's Mill Road	Stop Sign
19	Bethel Church Road and Creamery Road/Stony Run Road	Stop Sign
20	Bethel Church Road and Ellis Woods Road	Stop Sign
21	Ridge Road (PA Route 23) and Porters Mill Road	Stop Sign
22	Ridge Road (PA Route 23) and Bethel Church Road	Stop Sign

Existing Traffic Volumes

Traffic operating conditions are influenced by the relationships between traffic volumes and the service capacities of the roadways or intersections. In order to evaluate the existing conditions on area roadways, Manual Turning Movement (MTM) counts were conducted at each of the 22 study intersections during the weekday afternoon peak period (4:00 PM to 6:00 PM) on typical weekdays in March/April/June 1999 (by others) and in March/April 2000 (by McMahon Associates, Inc.). These traffic counts were tabulated by fifteen-minute periods to establish the four highest consecutive 15-minute periods, which constitutes the weekday afternoon peak hour, and serve as the basis for this analysis. The 1999 traffic data were adjusted upward 1.6 percent to reflect existing 2000 traffic volumes consistent with annual growth trends in Chester County, as documented in the Pennsylvania Department of Transportation publication, *1999 Pennsylvania Traffic Data*. **Figure 2** illustrates the 2000 existing weekday afternoon peak hour traffic volumes at the study area intersections. The actual MTM counts are provided in **Appendix C**.

Additionally, 24-hour Automatic Traffic Recorder (ATR) counts were conducted at 18 locations during March 2000 over the course of a one-week period to determine the traffic volumes typically entering and exiting the Township along the major study roadways, as well as to establish current traffic patterns along the area roadways. The average daily traffic volumes are summarized in Figure 1, and the ATR count data is provided in **Appendix D**. The ATR counts were conducted at the following locations:

- Schuylkill Road (PA Route 724), west of Old Schuylkill Road
- Schuylkill Road (PA Route 724), between Sanatoga Road and Anderson Road
- Schuylkill Road (PA Route 724), east of Bethel Church Road
- Linfield Road, east of Wells Road
- Old Schuylkill Road, between Fricks Lock Road and Sanatoga Road
- Bethel Church Road, south of Ridge Road
- Bethel Church Road, between Kolb Road and Saylor's Mill Road
- Ridge Road, west of Porters Mill Road
- Ridge Road, east of Bethel Church Road
- Ellis Woods Road, between Cedarville Road and Ebelhare Road
- Ellis Woods Road, east of Bethel Church Road
- Keim Street, north of Porters Mill Road
- School House Road, south of Porters Mill Road
- Pigeon Creek Road, near Porters Mill Road
- Cedarville Road, west of Spiece Road
- Kulp Road, west of School House Road
- Stony Run Road, east of Bethel Church Road
- Kolb Road, east of Bethel Church Road
- Sanatoga Road, between Old Schuylkill Road and Cedarville Road
- Brownbacks Church Road, south of Ridge Road

Transportation Service Areas

Act 209 requires the establishment of specific study boundaries, or transportation service areas, for evaluation and application of transportation impact fees. By law, each transportation service area is required to be completely contiguous and is limited to a maximum size of seven square miles. Moreover, traffic impact fees for each transportation service area are applicable only to development located within that respective service area, and therefore, development traffic from one service area is considered pass-through traffic within the other service area(s). Further explanation of pass-through and development traffic will be provided in subsequent sections.

As shown in **Figure 3**, the Transportation Advisory Committee has established two transportation service areas within East Coventry Township in accordance with the requirements of Act 209, and they are hereafter referred to as Transportation Service Area North and Transportation Service Area South. Both contiguous transportation service areas measure less than the maximum seven square miles required by the Act 209 legislation.

Transportation Service Area North

As illustrated in Figure 3, Transportation Service Area North (TSA-North) generally consists of the area of the Township north of the boundary formed by Pigeon Creek (east of Ellis Woods Road), a portion of Kulp Road (west of Ellis Woods Road), and roughly Mitchell Road. The *Land Use Assumptions Report* also contains a more definitive delineation of the service area boundary. The 15 study intersections located within the 5.3 square mile service area are defined in **Table 4**.

Table 4. Transportation Service Area North Study Intersections

Intersection Reference No.	Intersection
1	Schuylkill Road (PA Route 724) and Old Schuylkill Road (PA Route 724)
2	Schuylkill Road (PA Route 724) and Peterman Road
3	Schuylkill Road (PA Route 724) and Fricks Lock Road
4	Schuylkill Road (PA Route 724) and Sanatoga Road
5	Schuylkill Road (PA Route 724) and Anderson Road
6	Schuylkill Road (PA Route 724) and Wells Road
7	Schuylkill Road (PA Route 724)/Bethel Church Road/Linfield Road/ Old Schuylkill Road
8	Old Schuylkill Road and Spiece Road
9	Old Schuylkill Road and Peterman Road
10	Old Schuylkill Road and Ellis Woods Road
11	Old Schuylkill Road and Sanatoga Road
12	Old Schuylkill Road and Anderson Road
13	Cedarville Road and Spiece Road
14	Cedarville Road and Sanatoga Road
15	Kulp Road and School House Road

Transportation Service Area South

As illustrated in Figure 3, Transportation Service Area South (TSA-South) generally consists of the area of the Township south of the boundary formed by Pigeon Creek (east of Ellis Woods Road), a portion of Kulp Road (west of Ellis Woods Road), and roughly Mitchell Road. The seven study intersections located within the 5.7 square mile service area are defined in **Table 5**.

Table 5. Transportation Service Area South Study Intersections

Intersection Reference No.	Intersection
16	Bethel Church Road and Kolb Road
17	Kulp Road and Ebelhare Road
18	Bethel Church Road and Saylor's Mill Road
19	Bethel Church Road and Creamery Road/Stony Run Road
20	Bethel Church Road and Ellis Woods Road
21	Ridge Road (PA Route 23) and Porters Mill Road
22	Ridge Road (PA Route 23) and Bethel Church Road

EXISTING TRANSPORTATION CONDITIONS

The evaluation of the existing transportation network is based on the physical (i.e., traffic control, intersection geometry, lane usage, etc.) and operational (i.e., traffic volumes, signal timing/phasing) characteristics of the study intersections and roadways during the peak operational period. The Transportation Advisory Committee has selected the weekday afternoon peak hour as the basis of this *Roadway Sufficiency Analysis*.

Analysis Methodology

The traffic volumes in Figure 3 were subjected to detailed capacity/level-of-service analysis in accordance with the standard techniques contained in the *Highway Capacity Manual*⁽¹⁾. These standard capacity/level-of-service analysis techniques, which calculate total control delay, are more thoroughly described in **Appendix E** for both signalized and unsignalized intersections and two-lane rural roadway segments, as well as the correlation between average total control delay and the respective levels of service for each intersection and roadway type. Level of service (LOS) is the criterion utilized to evaluate the study intersections and roadways in accordance with standard traffic engineering practice and the Act 209 legislation.

Preferred Levels of Service

Consistent with the Act 209 legislation, the Transportation Advisory Committee has adopted preferred level-of-service criteria for the various intersections and roadways studied. The preferred level of service is considered the operational design standard by which each study intersection and roadway must operate under existing conditions, future pass-through conditions, and future development conditions in this *Roadway Sufficiency Analysis*. Any deficient (worsened) operations that do not satisfy the preferred levels of service at the study intersections and roadways must be improved for each condition.

According to Act 209, the preferred level of service may be waived by the municipality at individual intersections or roadway segments based upon difficulty in implementing various improvements (i.e., geometric design limitations, topographic limitations, or the unavailability of necessary right-of-way). Similarly, for unsignalized intersections where the preferred level-of-service criterion is not satisfied most often only signalization can mitigate the traffic deficiency; however, where traffic volumes do not meet traffic signal warrant criteria, as required by PennDOT, cannot be improved through signalization. Therefore, the required signalization/improvement must be waived or deferred until traffic volumes warrant signalization. As shown in **Table 6**, the Transportation Advisory Committee has adopted the following specific preferred level-of-service criteria for the purposes of this *Roadway Sufficiency Analysis*.

⁽¹⁾ Transportation Research Board, *Special Report 209, Highway Capacity Manual*, published by the Transportation Research Board, Washington, DC, Updated 1997.

Table 6. Preferred Level-of-Service Criteria

Intersection/Roadway Type	TSA-North	TSA-South
Signalized	LOS C all movements LOS C overall	LOS C all movements LOS C overall
Unsignalized	LOS D all movements	LOS D all movements
Roadway Segments	LOS D	LOS C

Existing Levels of Service

The year 2000 existing weekday afternoon peak hour traffic volumes presented in Figure 2 were subjected to the detailed capacity/level-of-service analysis methodology previously described. The results of the analysis are illustrated in **Figure 4**, and the detailed capacity/level-of-service analysis worksheets are contained in **Appendix F**.

As shown in Figure 4, of the 22 study intersections, 17 presently operate with acceptable levels of service with respect to the adopted preferred levels of service during the weekday afternoon peak hour. The remaining five study intersections that do not satisfy the preferred levels of service are all situated in TSA-North. The signalized Schuylkill Road (PA Route 724)/Bethel Church Road/Linfield Road intersection currently operates at overall LOS F during the weekday afternoon peak hour, with the westbound approach also functioning at LOS F. The following unsignalized intersections operate at LOS E or worse on at least one of the minor Street approaches:

- Schuylkill Road (PA Route 724) and Old Schuylkill Road (connector road)
- Schuylkill Road (PA Route 724) and Sanatoga Road
- Schuylkill Road (PA Route 724) and Anderson Road
- Schuylkill Road (PA Route 724) and Wells Road

The roadway segment level-of-service analysis indicates that each of the studied roadway segments satisfies the preferred level of service criteria, as shown in **Table 7**.

Table 7. Existing Roadway Segment Levels of Service

Roadway	Segment	Level-of-Service
Schuylkill Road (PA Route 724)	North Coventry Township to Sanatoga Road	D
	Sanatoga Road to East Vincent Township	D
Ridge Road (PA Route 23)	South Coventry Township to East Vincent Township	B

Existing Improvement Program

The improvements necessary to mitigate existing traffic deficiencies and satisfy the preferred level-of-service criteria are described in **Tables 8 and 9**, and the geometric and traffic signal improvements are also illustrated in **Figure 5**. Improvements will be required at five study intersections within TSA-North in order to achieve the preferred level of service under existing traffic conditions. Four unsignalized intersections will operate with LOS E conditions or worse on

the minor street approaches, of which only two intersections currently satisfy PennDOT traffic signal warrant criteria. Therefore, improvement of the Schuylkill Road (PA Route 724)/Sanatoga Road and Schuylkill Road (PA Route 724)/Anderson Road intersections, which currently fail to achieve both the preferred level of service criteria and traffic signal warrant criteria, must be deferred until such time that traffic volumes satisfy traffic signal warrant criteria, as required by PennDOT.

In order to achieve the preferred level of service criteria at the Schuylkill Road (PA Route 724)/Bethel Church Road/Linfield Road intersection, it is necessary to provide an additional westbound through-lane through the intersection. Also, it is recommended to signalize the Schuylkill Road (PA Route 724)/Wells Road intersection as signalization of both the Schuylkill Road/Old Schuylkill Road and Schuylkill Road/Wells Road intersections is warranted. However, signalization of the Schuylkill Road/Old Schuylkill Road intersection cannot be adequately accommodated due to the existing intersection geometry and lack of sufficient stacking space along the northbound Old Schuylkill Road approach. Instead, it is recommended to restrict the left-turn movement from Old Schuylkill Road, and to signalize the adjacent Schuylkill Road (PA Route 724)/Peterman Road intersection, which will satisfy traffic signal warrant criteria with the diversion of traffic associated with the Old Schuylkill Road left-turn restriction onto Schuylkill Road (PA Route 724) and better accommodate vehicular queuing. Advance directional signing will need to be installed to appropriately divert traffic to the signalized Schuylkill Road/Peterman Road intersection.

In addition to the improvements required to satisfy the preferred level-of-service criteria, several other improvements are also recommended to the Township to help address existing non-capacity-related operational deficiencies for the study intersections/roadways. Elimination of visual obstructions (i.e., vegetation, embankments, walls, fences, etc.) is recommended, as feasible, to improve sight distances at the following intersections and will likely require further evaluation and engineering:

- Schuylkill Road and Fricks Lock Road (embankment)
- Schuylkill Road and Sanatoga Road (embankment, vegetation, and guardrail)
- Schuylkill Road and Anderson Road (vegetation and bus stop)
- Old Schuylkill Road and Spiece Road (vegetation, wall, utility pole, and roadway crest)
- Old Schuylkill Road and Peterman Road (vegetation)
- Old Schuylkill Road and Sanatoga Road (roadway crest, embankment, and vegetation)
- Old Schuylkill Road and Saylor's Mill Road (vegetation)
- Old Schuylkill Road and Bethel Church Road (vegetation and utility pole)
- Cedarville Road and Spiece Road (vegetation)
- Cedarville Road and Sanatoga Road (vegetation)
- Bethel Church Road and Kolb Road (roadway crest, embankment, and vegetation)
- Bethel Church Road and Saylor's Mill Road (roadway crest)
- Bethel Church Road and Creamery Road/Stony Run Road (roadway crest)
- Bethel Church Road and Ellis Woods Road (vegetation)
- Ridge Road and Porters Mill Road (vegetation)
- Ridge Road and Bethel Church Road (vegetation, fence, and utility pole)

Similarly, the following roadway improvements are recommended for further evaluation and consideration in order to improve safety and operations along several roadways within the Township:

- Spiece Road – pave the unpaved portion of the roadway and eliminate the sharp horizontal curve, located south of Old Schuylkill Road.

- Kulp Road – widen the roadway to provide a consistent cartway width of at least 22 feet, and remove the reverse horizontal curve, located west of School House Road, or provide warning signage/delineation.
- Wells Road – improve the pavement and drainage conditions between Schuylkill Road and Old Schuylkill Road.
- Peterman Road – improve the pavement conditions between Schuylkill Road and Old Schuylkill Road.
- Ellis Woods Road – widen cartway along horizontal curve located at School House Road and provide advanced warning signage of the curve.
- Keim Street – widen cartway along horizontal curve located south of Bealer Road.

It is noted that the recommended transportation improvements contained herein do not preclude the necessity or desirability of improvements at other non-study intersections/roadways within the Township or at identified intersections/roadways contained in the *East Coventry Comprehensive Plan*, as well as at any other intersection/roadways where operational deficiencies may be identified in the future.

FUTURE TRAFFIC CONDITIONS

Act 209 requires a minimum five-year future time horizon for the development of the *Transportation Capital Improvements Plan* and *Transportation Impact Fee Ordinance*. A 10-year time frame was selected for the East Coventry Township Act 209 traffic analysis, which is consistent with the short-term development projections contained in the *Land Use Assumptions Report*, and produces a forecast year of 2010.

Future Traffic Components

Total future traffic volume forecasts for 2010 include three components: existing traffic, pass-through traffic, and development traffic. The first component, **existing traffic** was described in the previous section. The second component of future traffic projections is **pass-through traffic**, and is subdivided into the following two elements:

- The first element reflects future increases in regional traffic, which is both generated and destined to locations external to the designated transportation service areas, but passes through the designated service areas along the study roadways. This first element of pass-through traffic includes traffic generated by specific known future developments located within the adjacent municipalities.
- The second element of pass-through traffic includes future development traffic generated from other designated transportation service areas within the Township. Specifically, since East Coventry Township has two transportation service areas, development traffic in one service area constitutes pass-through traffic in the other service area. For example, while traffic generated from within TSA-South is considered “development” traffic in TSA-South, this same traffic is considered “pass-through” traffic when it traverses through TSA-North.

Development traffic that is generated by new development within the respective designated transportation service area constitutes the third and final component of future 2010 traffic volumes. Therefore, this section first addresses trip generation for each service area, based upon the development projections contained in the *Land Use Assumptions Report*, as well as the trip distribution assumption assumptions utilized in the analysis. Future pass-through traffic conditions are next described for each service area, incorporating existing traffic volumes in the service area, plus regional traffic growth (external to the Township) and development traffic generated from the service area, which passes through the designated service area. Finally, the future 2010 development traffic condition is defined for each service area, incorporating existing traffic volumes, future pass-through traffic volumes, and future development traffic volumes.

Trip Generation

Based upon the *Land Use Assumptions Report*, vehicular trip generation was estimated for the 2010 weekday afternoon peak hour utilizing the Institute of Transportation Engineers publication, *Trip Generation*, *6th Edition*. The resulting 2010 weekday afternoon peak hour trip generation is

summarized in **Tables 10 and 11** for TSA-North and TSA-South, respectively, which constitutes approximately a ten percent growth as contained in the Land Use Assumptions Report.

**Table 10. Vehicular Trip Generation
Transportation Service Area North**

Development	Zone ⁽¹⁾	ITE Code	Size	Weekday Afternoon New Trips		
				In	Out	Total
Coventry Business Park	A-2	770	190,250 s.f.	50	243	293
Retail Infill	A-2	820	54,335 s.f.	109	118	227
Industrial Infill	C-1	110	103,510 s.f.	12	89	101
Retail Infill	D	814	29,585 s.f.	17	23	40
Coventry Village	F-1	220	105 units	51	25	76
		230	64 units	28	14	42
	F-2	220	105 units	51	25	76
Jackson-Danbrick	G-1	210	2 units	2	1	3
Burkhart-Elliott	G-2	230	393 units	127	63	190
Institutional Development	G-3	520	22,320 s.f.	18	52	70
Coventry Mews	G-3	210	14 units	12	6	18
Carlier Tract	K-1	210	12 units	10	6	16
Residential Infill	L-1	210	5 units	4	3	7
Total New Trip Generation for TSA-North				491	668	1,159

(1) – The location of developments are identified and illustrated in the *Land Use Assumptions Report*.

**Table 11. Vehicular Trip Generation
Transportation Service Area South**

Development	Zone ⁽¹⁾	ITE Code	Size	Weekday Afternoon New Trips		
				In	Out	Total
Neighborhood Commercial	D-2	820	33,000 s.f.	95	104	199
Snowden Village	G-1	210	17 units	14	8	22
Residential Infill	H-1	210	20 units	16	9	25
Residential Infill	H-2	210	20 units	16	9	25
Coventry Ridge	I-2	13	13 units	11	6	17
Total New Trip Generation for TSA-South				152	136	288

(1) – The location of developments are identified and illustrated in the *Land Use Assumptions Report*.

Accordingly, each service area is estimated to experience a total weekday afternoon peak hour trip generation over the next ten years as summarized below in **Table 12**, which has been included in the traffic analysis.

**Table 12. Future Weekday Afternoon Peak Hour
Trip Generation by Transportation Service Area ⁽¹⁾**

Service Areas	Pass-Through ⁽²⁾ Trips	Development Trips	Total Trips
TSA-North	288 trips	1,159 trips	1,447 trips
TSA-South	1,159 trips	288 trips	1,447 trips

(1) – Based on the *Land Use Assumptions Report*.

(2) – Exclusive of regional traffic growth or development located within adjacent municipalities.

Trip Distribution

Vehicular traffic volumes generated by new development over the next ten years were generally distributed to the area roadway network based on existing travel patterns determined from the ADT volumes (Figure 1) entering and exiting the Township, as well as the location of specific future development parcels with respect to the study roadway network and other major traffic generators and destinations. The resultant overall directions of approach and departure are indicated in **Table 13**.

Table 13. Directions of Approach and Departure

Roadway	External Location (to/from)	Arrival/Departure
Schuylkill Road	west of Old Schuylkill Road	29 %
Schuylkill Road	east of Bethel Church Road	25 %
Ridge Road	west of Porters Mill Road	10 %
Ridge Road	east of Bethel Church Road	10 %
Linfield Road	north of Wells Road	11 %
Cedarville Road	west of Spiece Road	2 %
Kulp Road	west of School House Road	1 %
Keim Street	north of Porters Mill Road	4 %
School House Road	south of Porters Mill Road	1 %
Ellis Woods Road	east of Bethel Church Road	2 %
Stony Run Road	east of Bethel Church Road	2 %
Kolb Road	east of Bethel Church Road	2 %
Old Schuylkill Road	east of Linfield Road	1 %

Programmed Improvements

The following improvements have been programmed for the various East Coventry Township roadways and intersections, which will directly effect traffic operations:

- Bethel Church Road – will be upgraded and widened through the Township, and will provide two-foot shoulders. This improvement will be completed by PennDOT and is expected to be complete by 2002.
- Bethel Church Road – the vertical curve located in the vicinity of the two adjacent intersections with Saylor's Mill Road and Creamery/Stony Run Roads will be reprofiled. This improvement will be completed in association with an approved development, and construction is scheduled to commence in 2001. This improvement will increase the available sight distance at each intersection.
- Saylor's Mill Road – will be realigned to intersect Bethel Church Road further to the north to provide greater intersection spacing from the Bethel Church Road/Creamery Road/Stony Run Road intersection. This improvement will be completed in association with an approved development, and will be completed with the aforementioned Bethel Church reprofiling project.

2010 Future Pass-Through Traffic

Traffic generated by new development was generally assigned to the Township roadways and intersections based on the trip distribution assumptions previously described. Also, an annual traffic growth rate of 1.6 percent per year was applied to the existing weekday afternoon peak hour traffic volumes to reflect regional traffic growth in accordance with the PennDOT publication, **1999 Pennsylvania Traffic Data**, which recommends an annual traffic growth rate of 1.6 percent. This annual traffic growth rate was also confirmed with the Chester County Planning Commission for use in this study. Moreover, the inclusion of all background traffic assumptions, which includes traffic generated by other area developments, yields an effective annual growth rate of approximately three percent to five percent along the study roadways.

In addition to regional traffic growth, traffic associated with 25 developments located within the surrounding municipalities was distributed through the township roadway network and is included in the future traffic projections. The trip generation for these specific developments has been calculated and is included in **Appendix G**. In total, these known developments identified in the municipalities adjacent to East Coventry Township are categorized by land use type and summarized in **Table 14**.

Table 14. Approximate 2010 Build-Out in Surrounding Municipalities

Land Use Classification	Build-Out
Residential	1,213 dwelling units
Commercial	129,451 square feet
Office/Light Industrial	100,000 square feet
Institutional (Assisted Living)	700 beds

The 2010 future pass-through weekday afternoon peak hour traffic volumes are illustrated in **Figure 6**. In summary, these traffic volumes consist of both elements of pass-through traffic, including regional traffic growth (i.e., annual regional traffic growth trends and known developments located within surrounding municipalities) and developments located externally from the designated transportation service area, as detailed above.

2010 Future Development Traffic

As previously explained, the traffic generated by new development internal to the designated transportation service areas constitutes the third and final component of future 2010 traffic. The 2010 future development traffic volumes were determined based on assignment of development traffic within each respective transportation service area, and were added to 2010 future pass-through traffic volumes.

Assignment of the development trip generation to the study intersections and roadways results in 2010 future development traffic volumes, which are illustrated in **Figure 7**.

2010 Future Pass-Through Traffic Levels of Service

The future 2010 pass-through traffic volumes illustrated in Figure 6 were subjected to the previously described capacity/level-of-service analysis procedures to determine 2010 pass-through levels of service, and the detailed analyses are provided in **Appendix H**. As required by Act 209, the future conditions analysis was completed for future 2010 pass-through volumes for each study intersection and roadway, assuming implementation of the improvements included in the Existing Capital Improvement Program, in order to determine the incremental traffic impacts and required mitigation of future pass-through traffic.

Figure 8 summarizes the results of the 2010 future pass-through traffic capacity/level-of-service analyses for the study intersections, with the completion of previously described programmed and required improvements. Traffic operating conditions at the following six study intersections will not satisfy the preferred level of service criteria under 2010 future pass-through conditions.

- Schuylkill Road (PA Route 724) and Peterman Road
- Schuylkill Road (PA Route 724) and Fricks Lock Road
- Schuylkill Road (PA Route 724) and Sanatoga Road
- Schuylkill Road (PA Route 724) and Anderson Road
- Schuylkill Road (PA Route 724) and Wells Road
- Schuylkill Road (PA Route 724) and Bethel Church Road/Linfield Road

The roadway segment analysis indicates that each of the study roadways will continue to satisfy the preferred levels of service criteria. The results of the 2010 future pass-through roadway segment analysis are shown in **Table 15** for each of the studied roadway segments.

Table 15. 2010 Future Pass-Through Roadway Segment Levels of Service

Roadway	Segment	Level-of-Service
Schuylkill Road (PA Route 724)	North Coventry Township to Sanatoga Road	D
	Sanatoga Road to East Vincent Township	D
Ridge Road (PA Route 23)	South Coventry Township to East Vincent Township	C

2010 Future Pass-Through Improvement Program

The additional improvements required to accommodate pass-through traffic, beyond those improvements necessary to accommodate existing traffic at the preferred levels of service are illustrated in **Figure 9**. Also, these specific improvements required by future pass-through traffic to achieve the preferred level of service criteria are summarized in more detail in **Table 16 and 17** for each study intersection and roadway. The Future Pass-Through Capital Improvement Program for both transportation service areas includes traffic signal optimizations and geometric widening improvements at two intersections. Similar to existing conditions, four unsignalized intersections will also not satisfy the preferred levels of service criteria, but future pass-through traffic volumes will not meet warrant criteria for traffic signal installation, and therefore, the improvements at these intersections have been deferred (waived).

2010 Future Development Traffic Levels of Service

The future development traffic volumes presented in Figure 7 were subjected to the previously described capacity/level-of-service analysis procedures to determine future 2010 development levels of service, and the detailed analyses are provided in **Appendix I**. The 2010 future development conditions are illustrated in **Figure 10**, and indicate that the following seven study intersections will not satisfy the preferred levels of service criteria and require further improvements beyond those previously identified existing improvements, programmed/committed improvements, and future pass-through improvements.

- Schuylkill Road (PA Route 724) and Peterman Road
- Schuylkill Road (PA Route 724) and Fricks Lock Road
- Schuylkill Road (PA Route 724) and Sanatoga Road
- Schuylkill Road (PA Route 724) and Anderson Road
- Schuylkill Road (PA Route 724) and Wells Road
- Schuylkill Road (PA Route 724) and Bethel Church Road/Linfield Road
- Ridge Road and Bethel Church Road

The roadway segment analysis indicates that Schuylkill Road will not satisfy the preferred levels of service criteria under future development conditions, unlike Ridge Road, which will continue to operate acceptably. The results of the 2010 future development segment analysis are shown in **Table 18** for each of the studied roadway segments.

Table 18. 2010 Future Development Roadway Segment Levels of Service

Roadway	Segment	Level-of-Service
Schuylkill Road (PA Route 724)	North Coventry Township to Sanatoga Road	E ⁽¹⁾
	Sanatoga Road to East Vincent Township	E ⁽¹⁾
Ridge Road (PA Route 23)	South Coventry Township to East Vincent Township	C

(1) – Segment will operate at acceptable LOS D or better with recommend improvements described below.

2010 Future Development Improvement Program

The improvements necessary to achieve the preferred level-of-service criteria under 2010 development traffic conditions are summarized in **Tables 19 and 20**, and are illustrated in **Figure 11**. In summary, improvements will be required at six study intersections to accommodate development-generated traffic within the transportation service areas in order to maintain the established preferred levels of service. Similar to future pass-through conditions, these required intersection improvements include the need for traffic signal optimization, geometric widening improvements, as well as installation of new traffic signals. In addition to these intersection improvements, it is necessary to provide a three-lane cross-section, or an additional lane, along Schuylkill Road, which could accommodate a center-left-turn-lane, a passing/climbing lane, or a separate left-turn lane at intersections, as appropriate. Finally, the Schuylkill Road (PA Route 724) corridor signals throughout the Township should be designed and installed for a closed-loop signal control system, and each traffic signal should be capable of emergency pre-emption operation.

Signalization of the following intersections, which satisfy the required traffic signal warrant criteria, will be required to satisfy the preferred levels of service criteria in both service areas.

- Schuylkill Road (PA Route 724) and Fricks Lock Road
- Schuylkill Road (PA Route 724) and Sanatoga Road
- Ridge Road (PA Route 23) and Bethel Church Road

As under existing conditions and future pass-through conditions, the Schuylkill Road/Anderson Road intersection will not meet the preferred level of service criteria, but future development traffic volumes will not meet the required warrant criteria for traffic signal installation.

In addition to traffic signal timing optimizations at the Schuylkill Road (PA Route 724)/Bethel Church Road/Linfield Road intersection, it will be necessary to widen and convert the Schuylkill Road (PA Route 724) approaches to provide separate left-turn lane in each direction, as well as an eastbound shared through/right-turn lane, a westbound through lane, and a westbound right-turn lane. Additionally, it will be necessary to widen the Bethel Church Road and Linfield Road approaches to provide separate left-turn lanes. Due to the proximity of the Old Schuylkill Road intersections with Bethel Church Road (just south of the Schuylkill Road/Bethel Church Road/Linfield Road intersection) and Linfield Road (just north of the Schuylkill Road/Bethel Church Road/Linfield Road intersection) it is recommended after conferring with the Transportation Advisory Committee to terminate or cul-de-sac Old Schuylkill Road prior to its intersection with Bethel Church Road for acceptable operations. Similarly, it will be necessary to restrict the left-turn movement from Old Schuylkill Road to Linfield Road and construct a new one-way egress connector roadway to Schuylkill Road (PA Route 724), east of the signalized intersection, in order to accommodate this restricted left-turn movement.

Other Transportation Improvements

The Township should continue to consider additional transportation capital improvement projects beyond those identified in the *East Coventry Township Roadway Sufficiency Analysis* and *Capital Improvement Plan* in order to meet its future transportation needs. It is noted, however, that only those transportation improvements identified in the *Township Capital Improvement Plan*, prepared and adopted in accordance with the Act 209 legislation and are attributable to new development traffic, can be funded through transportation impact fees. Moreover, the *Roadway Sufficiency Analysis* should facilitate the transportation recommendations or vision contained in the *East Coventry Township Comprehensive Plan*, should provide a resource or reference for any future update of the *Comprehensive Plan*, but should not be considered as a replacement for the *Comprehensive Plan*.

East Coventry Township should consider several transportation improvement projects beyond those identified in this *Roadway Sufficiency Analysis*, as well as the resulting *Capital Improvement Plan*. These projects may include, but not be limited to, improvements at non-study intersections, upgrades of roadways along new development frontages, as well as the following:

- Spiece Road – The present alignment of Spiece Road, just south of Old Schuylkill Road, is undesirable due to the horizontal curvature of the roadway and the anticipated future traffic volumes along the roadway due to new development. Accordingly, the Township should consider straightening the roadway, which may be restricted due to a historic cemetery, or relocation of Spiece Road to provide another intersection location along Old Schuylkill Road. Furthermore, the sight distance at the Spiece Road/Old Schuylkill Road intersection is marginal,

and therefore, the relocation of Spiece Road or reprofiling of Old Schuylkill Road would provide a desirable improvement.

- Access Management – It is recommended that the Township consider implementing an access management plan for Schuylkill Road (PA Route 724) to limit the amount of intersections (particularly additional signalized intersections and left-turn unsignalized movements) from new development. Instead, the existing intersecting roadways, which will provide signalized access locations in the future, should be utilized for access to Schuylkill Road to the maximum extent feasible. Access management is particularly important for left-turn egress onto Schuylkill Road.
- Schuylkill Road (PA Route 724) – Traffic conditions beyond the design-year (2010) evaluated in this study may ultimately require a five-lane cross-section along Schuylkill Road, and therefore, it is recommended that the Township acquire, when available, any additional right-of-way to accommodate a possible future five-lane cross-section, as necessary. As development occurs along Schuylkill Road, the Township should consider requesting individual properties to dedicate any future right-of-way needed.
- Ridge Road (PA Route 23) – Traffic conditions beyond the design-year (2010) evaluated in this study may ultimately require a three-lane cross-section along Ridge Road, and therefore, it is recommended that the Township acquire, when available, the right-of-way to accommodate a possible future three-lane cross-section, as necessary. Property right-of-way dedication, as mentioned above for properties submitting for land development along Ridge Road, should be considered by the Township.

TRANSPORTATION CAPITAL IMPROVEMENT PLAN

This section summarizes East Coventry Township's *Transportation Capital Improvement Plan*. In accordance with Act 209, the following requirements were met:

1. Public notice of a public hearing on the *Transportation Capital Improvement Plan* was published two successive weeks, between seven and thirty days from the date of the hearing, in *The Mercury* on June 13, 2001 and June 20, 2001.
2. The *Transportation Capital Improvement Plan* was available for public inspection at the Township building at least ten working days prior to the hearing, or on June 13, 2001.
3. The public hearing was held on the *Transportation Capital Improvement Plan* to receive comments on July 2, 2001.

Following the public hearing, the *Transportation Capital Improvement Plan* was adopted by the Township Board of Supervisors on August 2, 2001.

The *Transportation Capital Improvement Plan* consists of three sections, which are described below, and includes the *Existing Transportation Capital Improvement Program*, the *Future Pass-Through Transportation Capital Improvement Program*, and the *Future Development Transportation Improvement Program*.

Existing Transportation Capital Improvement Program

The Existing Transportation Capital Improvement Program is summarized in **Table 21**, and details the improvements necessary to achieve the preferred levels of service under existing traffic conditions. Table 21 also provides a cost allocation of the improvements indicating the portions of the total cost for which the Township and PennDOT are responsible. **The total cost of the Existing Transportation Capital Improvement Program is approximately \$491,000.** The anticipated completion year for each of the improvements is also included in Table 21. It is noted that the non-capacity related improvements recommended in the *Roadway Sufficiency Analysis* have not been included in the Existing Transportation Capital Improvement Program as many of these improvements involve routine maintenance or require further engineering; however, these improvements should still be evaluated and implemented by the Township.

Future Pass-Through Transportation Capital Improvement Program

The Future Pass-Through Transportation Capital Improvement Program is summarized in **Table 22** and details the improvements necessary to achieve the preferred levels of service under future 2010 pass-through conditions. Table 22 also provides a cost allocation of the improvements indicating the portions of the total cost for which the Township and PennDOT are responsible. **The total cost of the Future Pass-through Transportation Capital Improvement Program is approximately \$381,000.** The anticipated completion year for each of the improvements is also included in Table 22.

Future Development Transportation Capital Improvement Program

The Future Development Transportation Capital Improvement Program is summarized in **Table 23** and details the improvements necessary to achieve the preferred levels of service under future 2010 development traffic conditions. Table 23 also provides a cost allocation of the improvements indicating the portions of the total cost for which PennDOT and future development are responsible. **The total cost of the Future Development Transportation Capital Improvement Program is approximately \$4,617,000 in TSA-North and is approximately \$99,000 in TSA-South.** The anticipated completion year for each of the improvements is also included in Table 23.

Improvements Summary

The total costs of the East Coventry Township *Transportation Capital Improvement Plan*, which includes existing, pass-through, and development improvements, and are summarized in **Table 24**. As indicated, the total cost of the *Transportation Capital Improvement Plan* is approximately \$5,588,000, and is allocated to the Township (approximately nine percent), to PennDOT (approximately 46 percent), and to future development (approximately 45 percent).

Impact Fee

The impact fee calculations for development improvements are summarized in **Table 25** for each transportation service area.

Table 25. Transportation Impact Fee by Service Area

Transportation Service Area	Development Capital Improvement Costs¹	Development Trips	Impact Fee^{2,3}
TSA-North	\$2,503,057	1,159 trips	\$2,159.67
TSA-South	\$60,720	288 trips	\$210.83

(1) – Inclusive of the prorata share of costs incurred for the completion of the *Roadway Sufficiency Analysis* that is attributable to development (\$10,432 in TSA-North and \$11,220 in TSA-South, as allocated by TSA size).

(2) – To be assessed on a per weekday afternoon peak hour trip basis.

(3) – Development capital improvement costs divided by new development trips.

Table 8. Existing Conditions Improvement Program for Study Intersections

Int No.	Intersection	Service Area	Control Type	Recommended Improvements ⁽¹⁾	
1	Schuylkill Road and Old Schuylkill Road	North	Stop Sign	Restrict left-turn movement from Old Schuylkill Road.	
2	Schuylkill Road and Peterman Road	North	Stop Sign	Signalization. ⁽²⁾ Provide advance directional signing to direct motorists.	
3	Schuylkill Road and Fricks Lock Road	North	Stop Sign	Cutback embankment along southern side of Schuylkill Road to improve sight distance for northbound Fricks Lock Road approach.	*
4	Schuylkill Road and Sanatoga Road	North	Stop Sign	Clear vegetation and cutback embankment along southern side of Schuylkill Road, and possibly relocate/adjust guardrail east of the intersection to improve sight distance for both Sanatoga Road approaches.	*
5	Schuylkill Road and Anderson Road	North	Stop Sign	Clear vegetation along northwest corner and relocate busstop shelter on northeast corner to improve sight distance for southbound Anderson Road approach.	*
6	Schuylkill Road and Wells Road	North	Stop Sign	Signalization.	
7	Schuylkill Road/Bethel Church Road/Linfield Road/Old Schuylkill Road	North	Traffic Signal	Widen westbound Schuylkill Road to provide additional through lane. Install new traffic signal. Clear vegetation and relocate utility pole to improve sight distance from southern Old Schuylkill Road approach to Bethel Church Road.	(*)
8	Old Schuylkill Road and Spiece Road	North	Stop Sign	Clear vegetation along Old Schuylkill Road west of the intersection, and reprofile vertical crest in Old Schuylkill Road just east of the intersection to improve sight distance for Spiece Road.	*
9	Old Schuylkill Road and Peterman Road	North	Stop Sign	Clear vegetation along northwest corner to improve sight distance from southbound Peterman Road approach.	*
10	Old Schuylkill Road and Ellis Woods Road	North	Stop Sign	No improvements recommended or required.	
11	Old Schuylkill Road and Sanatoga Road	North	Stop Sign	Regrade embankment and clear vegetation to provide additional sight distance for Sanatoga Road approaches.	*
12	Old Schuylkill Road and Saylor's Mill Road	North	Stop Sign	Clear vegetation along southern side of Old Schuylkill Road to the west of the intersection to improve sight distance for Saylor's Mill Road approach.	*
13	Cedarville Road and Spiece Road	North	Stop Sign	Clear vegetation to improve sight distance for southbound Spiece Road approach.	*
14	Cedarville Road and Sanatoga Road	North	Stop Sign	Clear vegetation on northeast corner to improve sight distance for westbound Cedarville Road approach.	*
15	Kulp Road and School House Road	North	Stop Sign	No improvements recommended or required.	*
16	Bethel Church Road and Kolb Road	South	Stop Sign	Cutback embankment and clear vegetation along both sides of Bethel Church Road, and possibly reprofile Bethel Church Road north of the intersection, to improve sight distance for both Kolb Road approaches.	*
17	Kulp Road and Ebelhare Road	South	Stop Sign	No improvements recommended or required.	
18	Bethel Church Road and Saylor's Mill Road	South	Stop Sign	Realign Saylor's Mill Road to intersect Bethel Church Road further north of Bethel Church Road/Creamery Road/Stony Run Road. ⁽³⁾	*
19	Bethel Church Road/Creamery Road/Stony Run Road	South	Stop Sign	Reprofile the vertical curvature of Bethel Church Road in the vicinity of the intersection to improve sight distances. ⁽³⁾	*
20	Bethel Church Road and Ellis Woods Road	South	Stop Sign	Clear vegetation along northwest and southeast corners of the intersection to improve sight distance on both Ellis Woods Road approaches.	*
21	Ridge Road and Porters Mill Road	South	Stop Sign	Clear vegetation on northwest corner of the intersection to improve sight distance for southbound Porters Mill Road approach.	*
22	Ridge Road and Bethel Church Road	South	Stop Sign	Clear vegetation and relocate utility pole on northwest corner of the intersection to improve sight distance for southbound Bethel Church Road approach.	*

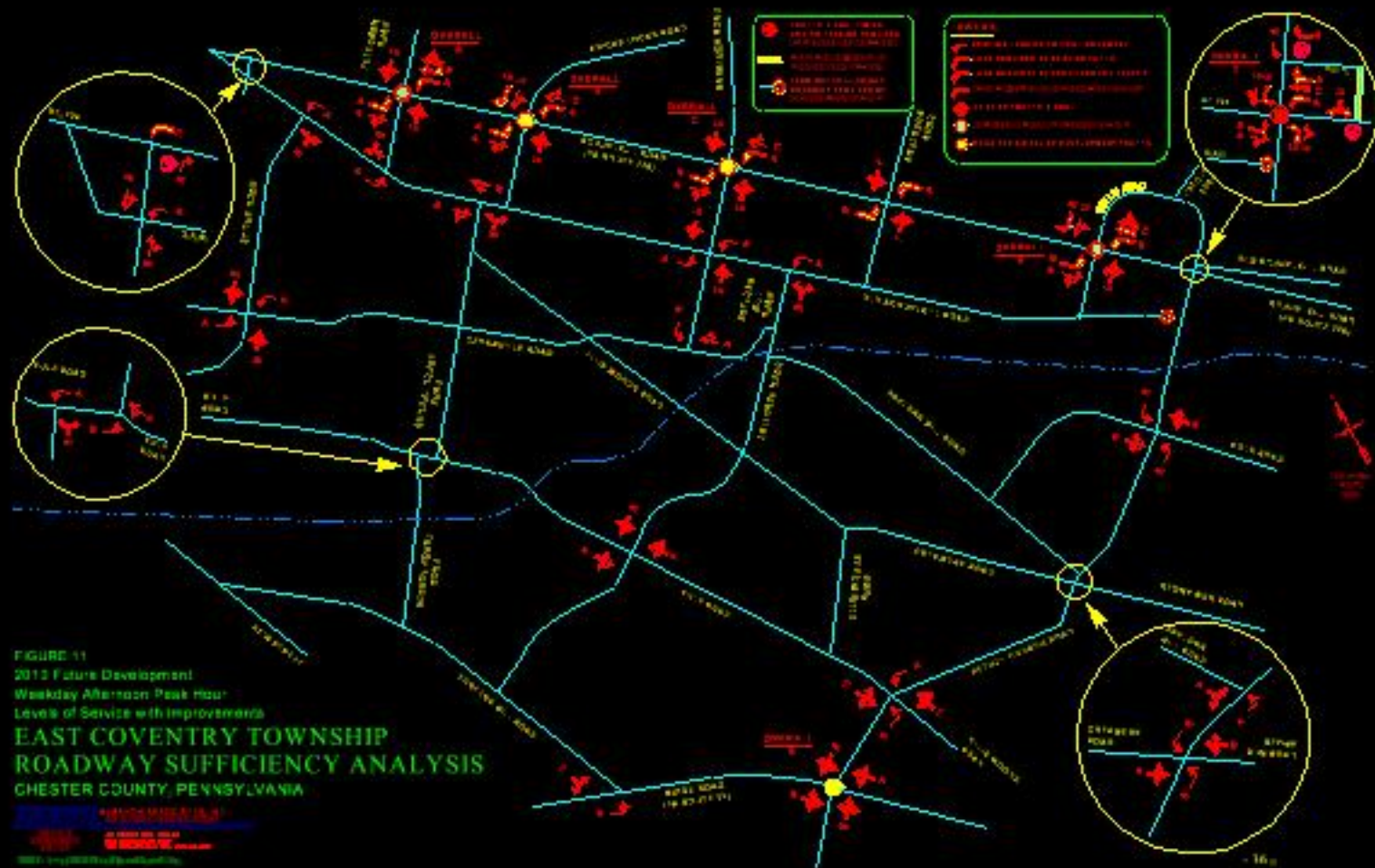
- (1) Recommendations may be modified or amended to include additional improvements to address existing operational deficiencies (i.e., sight distance, roadway curvature/alignment, etc.) upon further evaluation.
- (2) Traffic volumes expected to warrant signalization with traffic diversions expected as a result of the recommended turning restriction at Intersection No. 1.
- (3) Recommended improvement is a developer committed improvement.
- * Indicates a non-capacity improvement recommended to improve operating characteristics of the intersection.

**Table 21. Existing Transportation Capital Improvement Program
-- Transportation Service Area North --**

Int. No.	Intersection or Corridor	Improvements Required	Total Project Cost ⁽¹⁾	Allocated Funding			Construction Completion ⁽²⁾
				PennDOT Costs	Others Costs	Township Costs	
1	PA Route 724/Old Schuylkill Road	Restrict left-turn movement from Old Schuylkill Road.	\$3,000	\$0	\$0	\$3,000	2010 B
2	PA Route 724/Peterman Road	Signalization (with advance directional signing).	\$79,000	\$19,750	\$0	\$59,250	2010 B
6	PA Route 724/Wells Road	Signalization.	\$79,000	\$19,750	\$0	\$59,250	2010 A
7	PA Route 724/Bethel Church Road/ Linfield Road/Old Schuylkill Road	Widen westbound Schuylkill Road for additional through lane. Install new traffic signal.	\$330,000	\$165,000	\$0	\$165,000	2010 C
Total Costs			\$491,000	\$204,500	\$0	\$286,500	

⁽¹⁾ - Estimated costs include engineering, right-of-way, and construction.

⁽²⁾ - Recommended priority schedule {A (highest priority focus)} set by Transportation Advisory Committee.



LEGEND:

- TRANSPORTATION SERVICE AREA BOUNDARY
- TOWNSHIP BOUNDARY



TRANSPORTATION
SERVICE AREA SOUTH
5.7 SQ. MI.

TRANSPORTATION
SERVICE AREA NORTH
5.3 SQ. MI.

FIGURE 2

Transportation Service Areas

**EAST COVENTRY TOWNSHIP
ROADWAY SUFFICIENCY ANALYSIS
CHESTER COUNTY, PENNSYLVANIA**



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